ELM Consulting LLC™

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copy

June 28, 2006

Mr. John Feeney
Wisconsin Department of Natural Resources
1155 Pilgrim Parkway
Plymouth, WI 53073

other copy sent to Vicky S. @ HQ

Subject: **Underground Injection Control Approval Request**
Cook Composites and Polymers Co.
Saukville, Wisconsin
WDNR FID #: 246004330

Dear Mr. Feeney:

On behalf of Cook Composites and Polymers Co. (CCP), ELM Consulting, LLC (ELM) is submitting this Underground Injection Control (UIC) Approval Request for the pilot-scale injection (Pilot Test) of the BIOX® in Area of Concern (AOC) 1 at the CCP Saukville site (the Site). This document, and its attachments, provide the information required for approval based on the *UIC Approval Request Technical Assistance for Submittals.* Two (2) copies of the UIC Approval Request have been provided to facilitate the review process. Additionally, a check in the amount of $500 has been included for the technical review fee.

Background

The Site is located in the Village of Saukville, Ozaukee County, Wisconsin. The site location is depicted on Figure 1 in Attachment 1.

The soils in onsite AOC 1, 2 and 3 continue to act as sources of groundwater contamination at the Site. Historical groundwater monitoring results indicate the soils will continue to act as sources of groundwater contamination for many years to come. In order to reduce the contaminant concentrations in the groundwater, it will be necessary to reduce the mass of contaminants present in the soils in the onsite AOCs.

We propose to perform a Pilot Test injection in AOC 1 to evaluate the effectiveness of the BIOX® process to reduce contaminant concentrations in the subsurface. Following completion of the Pilot Test, full-scale treatment may be implemented to reduce the source area contaminant concentrations in each of the onsite AOCs. Ultimately, by removing the mass of contaminants in the soil that are acting as continuing sources of impacts to the groundwater, the groundwater plumes will sufficiently decrease in volume and mass due to natural attenuation processes thereby allowing the groundwater extraction system to be shut-down.

Currently, three (3) onsite AOCs exist on the Site. The onsite AOCs are described as follows:

AOC 1 – Former Urethane Laboratory/Former Liquids Incinerator Area

The former liquids incinerator was used to dispose reaction water from 1968 to 1989. AOC 1 is located on the northeast portion of the Site in the vicinity of the former solid waste incinerator and former soil vapor extraction (SVE) system.

AOC 2 – Former Dry Well

The former dry well was used from approximately 1952 through 1968 to dispose of reaction water as approved by the Wisconsin Division of Water Pollution Control. AOC 2 is located in the west-central portion of the Site in the vicinity of monitoring well W-06A.

AOC 3 – Former Tank Farm Storage Area

A tank farm consisting of an earthen berm utilized for the storage of raw materials and finished product formerly occupied this area. AOC 3 is located near the center of the Site to the east and south of the former non-hazardous liquid waste incinerator and the existing tank farm.

The location of the onsite AOCs are depicted on Figure 2 in Attachment 1.

Proposed Pilot Test Location Physical and Chemical Attributes

Based on several factors, it was decided to perform the Pilot Test in AOC 1. The proposed application location is depicted on Figure 3 in Attachment 1. The factors that led to the decision to perform the Pilot Test in AOC 1 are as follows:

- AOC 1 is located in a non-production area of the Site,
- AOC 1 is located outside of typical traffic areas at the Site,
- AOC 1 has been investigated to a greater degree than AOCs 2 and 3,
- AOC 1 contains the SVE system that failed to remediate the soils impacted by the Former Liquids Incinerator, and
- downgradient flows from AOC 1 are intercepted by two separate legs of Ranney Collector No. 3 (RC-3) and one leg of RC-1.

AOC 1 Soil Analytical Data

A significant amount of soil data has been collected from AOC 1 and the immediate vicinity. Soil investigations were performed in 1991, 1993 during the installation of the SVE system, 1994 and 2004 following shut-down of the SVE system. A total of 25 soil borings were advanced within AOC 1 and the immediate vicinity. Typically, soil samples were submitted for analysis every two feet from the ground surface to a maximum depth of 11 feet. The results of the sampling have been depicted by compound on the following figures in Attachment A.

Figure 4 Benzene in Soil (µg/kg)
Figure 5 Ethylbenzene in Soil (µg/kg)

Figure 6 Toluene in Soil (µg/kg)
Figure 7 Total Xylenes in Soil (µg/kg)

As depicted in these figures, total xylenes represents the constituent with the highest concentrations in the soil. Total xylene concentrations are as high as 12,000,000 micrograms per kilogram (µg/kg). Concentrations of ethylbenzene and toluene are as high as 3,000,000 µg/kg and benzene was typically less than the elevated detection limits due to the dilutions necessary to quantify the other constituents. Throughout the several iterations of investigation in AOC 1, free product has not been noted in the pore space of the soil samples retrieved, or on the groundwater surface, when encountered.

In October 1995, RMT, Inc. prepared the *RCRA Facility Investigation Additional Studies Report (RFI Report)* for the Site. As part of the RFI Report, RMT developed a cross-sectional drawing oriented east to west through onsite AOC 1 and the offsite AOC 5, located in the adjacent Immaculate Conception Churchyard (the Churchyard). Soil data collected since RMT developed this cross-section agrees with what was originally depicted. We have included a copy of this figure from the RFI Report as Figure 8 in Attachment 1

AOC 1 Physical Attributes
As shown on the cross-section (Figure 8 in Attachment 1), the highly contaminated soil is located within the upper 8 feet of the soil profile, corresponding to the unsaturated portion of the soil profile. There appears to be an approximately 2 foot thick "smear" zone that extends beneath the groundwater table due to seasonal fluctuations. Moderately contamination extends from beneath the "smear" zone to the top of the dolomite bedrock present at approximately 15 feet below the ground surface. Contaminants have not been documented in the dolomite beyond the upper weathered bedrock surface.

In 1996, RMT directed the remediation of offsite AOC 5 (the Churchyard) immediately adjacent to onsite AOC 1 to the east. RMT and their subcontractors, addressed contaminated soils in AOC 5 by excavating an area measuring 98 feet by 212 feet to a depth of 5 to 6.5 feet below surface grade. Approximately 7,000 tons of impacted soil was transported to a local disposal facility for biological treatment and incorporation into the working face of the facility as daily cover.

Following completion of the excavation in AOC 5, power and water transfer lines to extraction well W-37, located in the Churchyard, were damaged. Subsequently, it was decided that extraction well W-37 would be abandoned and leg B of RC-3 would be extended northward to the former W-37 location.

Prior to backfilling the resulting excavation, a geomembrane was placed in the base of the excavation to prevent recontamination of the backfill. The excavation was then backfilled with a silty clay, a topsoil rooting layer was placed and grass was planted.

AOC 1 Groundwater Analytical Data
Groundwater at the Site is currently sampled on a semi-annual basis. Prior to 2005, when a modification to the groundwater monitoring plan was approved, groundwater was sampled on a quarterly basis. The groundwater in the unconsolidated glacial drift unit flows primarily

west to east towards the Milwaukee River. Active groundwater extraction on the Site, has affected the flow regime and contains impacted groundwater on the Site. The water table in the glacial drift aquifer, as measured in October 2005, is depicted on Figure 9 in Attachment 1.

Five groundwater monitoring wells are located downgradient of AOC 1.

- Glacial drift monitoring well W-47 is located on the Site immediately east of AOC 1.
- Glacial drift monitoring well W-16A and shallow dolomite piezometer W-40 are located downgradient of the AOC 5 remediation area in the Churchyard.
- Glacial drift monitoring well W-3B and shallow dolomite piezometer W-3A are located downgradient of the Churchyard in the rear of the property located at 125 Church Street.

Monitoring well W-47 has been sampled on an annual basis for approximately 15 years. The groundwater sample collected from monitoring well W-47 in January 2006 contained the following detectable concentrations:

Ethylbenzene	2,500 micrograms per liter (µg/L)
Toluene	3,000 µg/L
Total Xylenes	67,000 µg/L
2,4-Dimethylphenol	1,200 µg/L
2-Methylnaphthalene	4.5 µg/L
2-Methylphenol	97 µg/L
3&4-Methylphenol	86 µg/L
Naphthalene	30 µg/L
Phenol	7.1 µg/L
Aroclor 1242	3.0 µg/L
Barium	180 µg/L
Arsenic	5 µg/L

Copies of the summary tables of results from the January 2006 sampling event are included in Attachment 2.

Monitoring well W-16A and piezometer W-40 were added to the modified groundwater monitoring plan in 2005, and are sampled on a semi-annual basis. During the first sampling event that these two wells were included in the monitoring network, glacial drift monitoring well W-16A was dry and could not be sampled. Shallow dolomite piezometer W-40 was sampled, and no VOCs were detected in the sample.

Monitoring well W-3B and piezometer W-3A have been sampled semi-annually for approximately 15 years. No VOCs have been detected in samples collected from either of these wells.

It is our opinion that these results indicate that the groundwater impacts documented in monitoring well W-47 are effectively being intercepted by the 3 legs of Ranney Collector

trenches that extend northward from the Site onto the Churchyard, effectively preventing the impacts from migrating laterally or vertically. It is these same Ranney Collector trenches that will act as downgradient protection from the potential liberation of contaminants during the injection process. It is our opinion that the injection process will not liberate contaminants into the groundwater. However, if liberation of contaminants were to occur, the Ranney Collector trenches would prevent the migration of the impacts from extending beyond the Churchyard.

Potential Receptors

Municipal Wells

Potable water is provided in the Village of Saukville via three municipal drinking water wells. The nearest municipal drinking water well is MW-1 located approximately 1,500 feet to the northeast of the proposed treatment area on the Site. The other two active municipal drinking water wells (MW-3 and MW-4) are located approximately 4,000 feet east and 4,500 feet north, respectively, of the proposed treatment area on the Site.

Municipal drinking water well MW-2 was formerly located approximately 750 feet northwest of the proposed treatment area on the Site. However, municipal drinking water well MW-2 was removed from the Village distribution system in 1979, and was abandoned by removing the pump and grouting shut the casing in 2004. The location of the municipal drinking water wells are depicted on Figure 1 in Attachment 1.

Residences

Three residences are located on the south side of Church Street, abutting the northern edge of the Churchyard. These residences are located at the address 219, 231 and 247 West Church Street. It is assumed that each of these structures contain full basements.

In addition to the residences, the Immaculate Conception Church, which includes the Ozaukee Christian School are located approximately 300 feet to the east of the proposed treatment area on the Site, across the Churchyard.

A depiction of the adjacent properties is shown on Figure 10 in Attachment 1.

Proposed Injection Process

CCP and ELM have chosen to Pilot Test the BIOX® process. The BIOX® Process is a remedial technology that combines chemical oxidation with enhanced biodegradation of contaminants in soil and groundwater. The patented BIOX® formulation includes but is not limited to combinations of solid peroxides, pH buffer systems and nutrients (Kiest and Trezzo, U.S. Patent No. 6,268,205). The BIOX® formulation is adjusted to area-specific soil, geochemical and contaminant conditions. The pH of BIOX® fluids typically ranges from pH 7 to pH 8.5.

The chemical oxidation component of the BIOX® process is based on Fenton-type reactions. In Fenton-type reactions, ferrous and ferric iron decompose hydrogen peroxide to molecular

oxygen, radicals (predominantly hydroxyl radicals), and water. The Fenton-type reactions of the BIOX® process include reactions of hydrogen peroxide evolving from the dissolution of solid peroxides (e.g. magnesium or calcium peroxide, or sodium percarbonate) with dissolved iron as well as iron-containing minerals and fulvic and humic substances in soil. An iron catalyst may be supplemented if the naturally occurring iron species are insufficient for the activation of Fenton-type reactions. The BIOX® formulation prevents excessive degassing. Further, the Fenton-type reactions induced by the BIOX® formulation generate only minimal increases in groundwater temperature (< 5 °F).

Fenton-type reactions can completely oxidize organic compounds to their elemental oxides such as carbon dioxide and water. Fenton-type reactions also yield products of partial oxidation such as hydroxylated hydrocarbons. In general, partially oxidized products of the reaction are more soluble in water, and are more readily degraded by microorganisms present in soil. Typically, the heterotrophic microbial population increases in soil and groundwater within weeks after the application of the BIOX® formulation.

In the subsurface environment, an important parameter limiting chemical and biological degradation of hydrophobic organic compounds (HOCs) such as chloroethenes and chloroethanes, as well as benzene, toluene and xylene is their accessibility to reagents and microorganisms, respectively. It is generally accepted that chemical oxidation and biodegradation of HOCs is limited by their low water solubility and strong adsorption to soil. The mechanisms by which these compounds are made accessible to the degradative microorganisms are transfer by dissolution into the aqueous phase and direct interfacial uptake.

Degradative organisms are essentially bacteria and fungi. Aerobic metabolisms are the major routes through which aliphatic and aromatic hydrocarbons are degraded. In general, bacteria utilize aliphatic hydrocarbons as well as two to four ring PAHs (e.g., anthracene) as growth substrates, leading to their mineralization. In addition, bacteria degrade biorefractory chlorinated hydrocarbons (e,g., trichloroethene) as well as five and six-ring PAHs (e.g. Benzo(a)pyrene and Indeno(1,2,3-cd)pyrene, respectively) through co-metabolic processes that require the presence of a growth substrate. The chemical oxidation of biorefractory organic compounds (e.g., benzene, PAHs) transforms them into biodegradable growth substrate required for metabolic and co-metabolic processes. The nutrients, included in the BIOX® formulation and the oxygen generated by the reactions create geochemical conditions that are conducive to aerobic biological degradation. The stimulation of microbial population growth depends on the presence of an acclimated indigenous consortium capable of metabolizing the contaminants of concern and the products of partial oxidation.

The ability to place reagents in contact with contaminants is critical for the success of in-situ chemical oxidation technologies. BMS has more than eight years of field experience with the injection of reagents and amendments into a variety of regional and subsurface settings. Therefore, BMS determines the spacing for injection points based on its empirically developed field procedures. However, BMS' field procedures have the flexibility to increase or decrease the spacing of injection points, based on the field observations of its experienced staff and in consultation with the engineer/geologist who is intimately familiar with the site geology and the vertical and horizontal distribution of environmental impacts in the treatment area. During a BIOX® injection campaign, areas of high and low contaminant concentration may be identified

based on the type and intensity of the reaction that is observed at the injection point (see pictures at http://www.BIOXtech.com/). BMS relocates injection points from areas of low contaminant concentration to areas of high contaminant concentration based on the field observations of its experienced staff and in consultation with the engineer/geologist who has developed the site conceptual model based on site geology, hydrogeology and the vertical and horizontal distribution of environmental impacts in the treatment area.

The Pilot Test will be performed on a 30 foot by 30 foot area as shown on Figure 2 in Attachment 1. BMS proposes to inject approximately 52 gallons of BIOX® solution per injection point. The injection points will be spaced on a 4 foot grid, and each injection point will extend to the top of the dolomite bedrock surface assumed to be at 15 feet below the ground surface. A detailed BIOX® Process Injection Approval Request is included in Attachment 3.

Monitoring Plan

With the exception of pre-Pilot Test sampling for geochemical parameters, it is our opinion that sufficient soil and groundwater VOC data exists to forego any additional pre-Pilot Test sampling. Immediately prior to implementing the Pilot Test, a groundwater sample will be collected from monitoring well W-47 for laboratory analysis for the following parameters:

- Heterotrophic plate count (microbial activity);
- Nitrate;
- Sulfate;
- Phosphorous; and,
- Methane.

In addition, field parameters including, temperature, dissolved oxygen, oxidation-reduction potential (ORP), pH, turbidity and temperature will be measured at the time of sampling.

In order to evaluate the effectiveness of the Pilot Test, post-treatment soil and groundwater sampling will be performed. Per the recommendations of BMS, soil and groundwater samples will be collected from the treatment zone at 60 and 90 day intervals after the completion of the injection event. Borings will be advanced at four (4) locations within the injection grid. The approximate locations of the post-Pilot Test samples are depicted on Figure 11 in Attachment 1.

Soil samples will be collected continuously from the ground surface to the groundwater surface. One (1) soil sample from each two (2) foot interval will be submitted for laboratory volatile organic compound (VOC) analysis to evaluate the effectiveness of the chemical oxidation portion of the BIOX® injectant. In addition, representative soil samples from two of the borings will also be submitted for heterotrophic plate count to evaluate the microbial population in the soil.

Following the completion of soil sampling activities, temporary well casing will be installed at each soil boring location for the collection of grab groundwater samples. Groundwater samples from each of the temporary wells, along with monitoring well W-47, will be submitted for the following analyses:

- VOCs;
- Heterotrophic plate count (microbial activity);

- Nitrate;
- Sulfate;
- Phosphorous; and,
- Methane.

In addition, field parameters including, temperature, dissolved oxygen, ORP, pH, turbidity and temperature will be measured at each sampling point at the time of sampling.

Closing Remarks

We trust this Underground Injection Control Approval Request meets your requirements. Should you have any questions regarding the proposed Pilot Test, please feel free to contact me at 414-225-9604.

Sincerely,

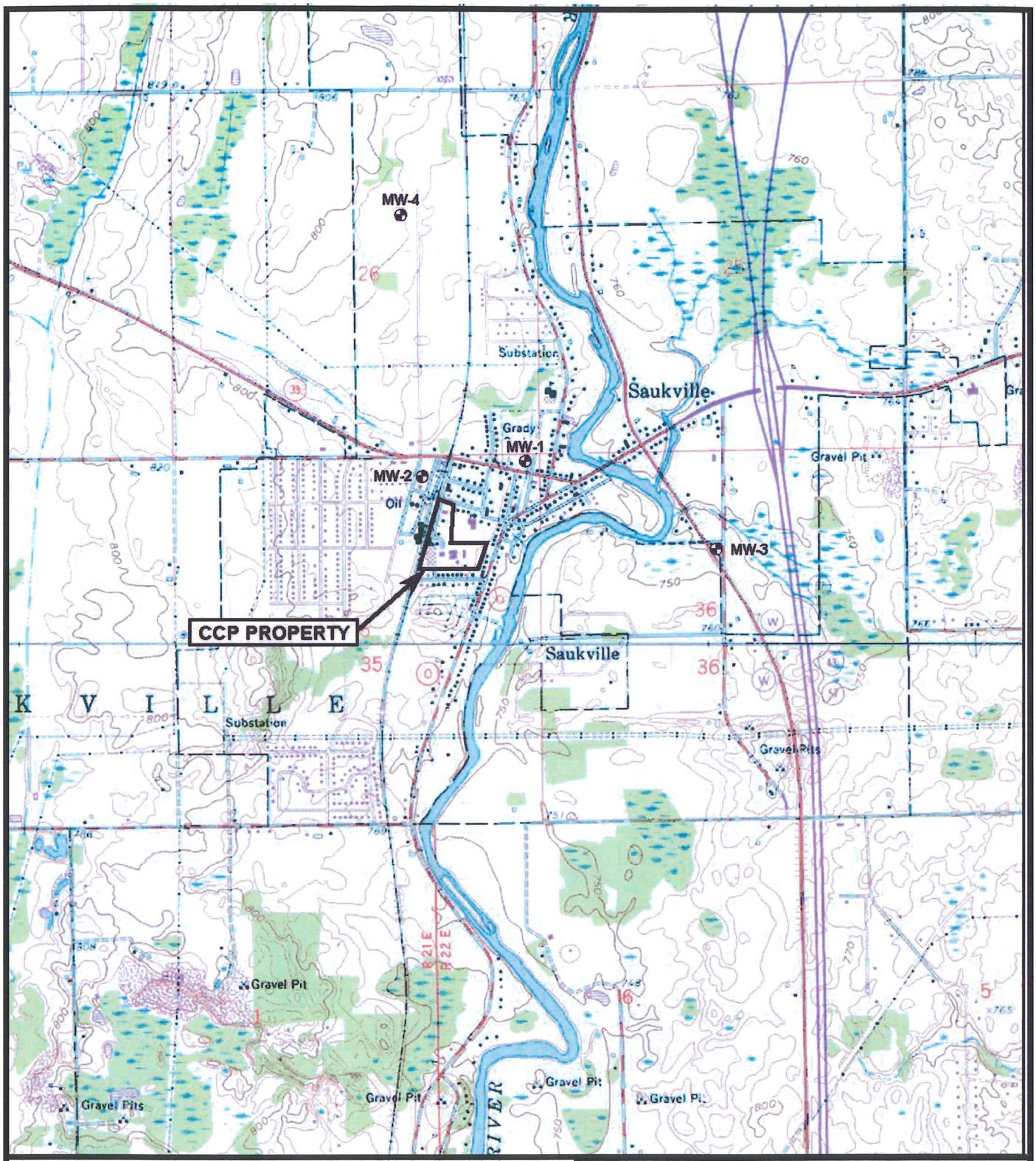
ELM Consulting, LLC

Robert A. Cigale, P.G., CHMM
Senior Consultant

cc: Michael Gromacki – CCP, North Kansas City
Glenn Preisler – CCP, Saukville

Attachments:

Attachment 1	Figures
Attachment 2	W-47 Results Summary Table
Attachment 3	Application for BIOX® Process Injection Approval



SOURCE: USGS QUADRANGLE MAP, SAUKVILLE, WISCONSIN

N

0 1000 2000

SCALE IN FEET

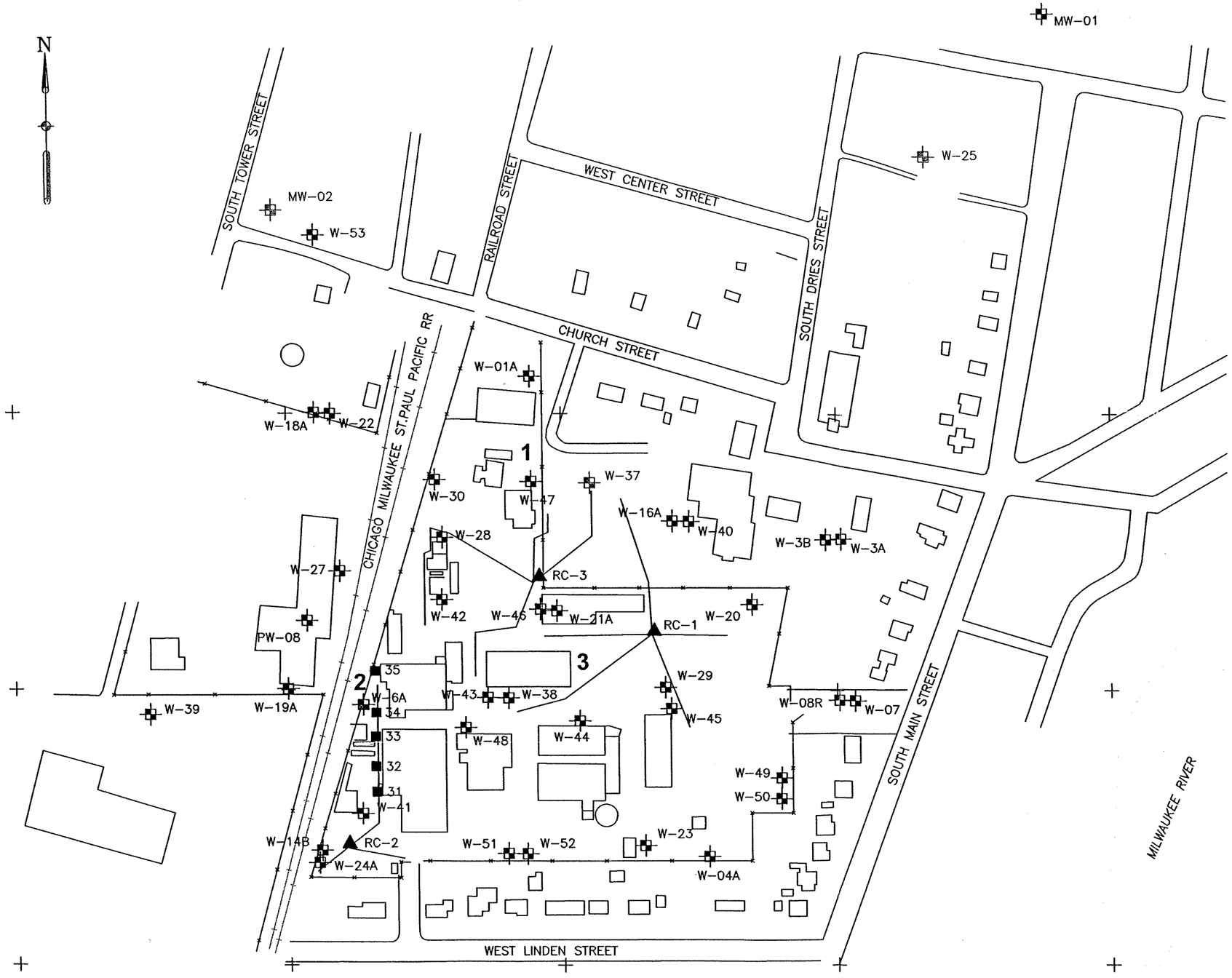
M:\USER\RCIGALE\CCP2005\CMS\PILOT TEST\SITELOCMAP.AI

SITE LOCATION MAP

COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM Consulting LLC™
330 EAST KILBOURN AVE., SUITE 827
MILWAUKEE, WISCONSIN 53202
Phone: (414)225-9604
Fax: (414)225-9324

DRAWN BY: LMS	DATE: 02MAY06	PROJ #: BA-0001-06	
REVEIWED BY: RAC	DWG #: SITELOCMAP.AI	FIGURE 1	



LEGEND

- BUILDING
- ROAD
- FENCE
- RAILROAD
- WATERLINE
- W-18A — MONITORING WELL LOCATION AND NUMBER
- RC-1 — RANNEY COLLECTOR
- RANNEY COLLECTOR TRENCHES
- 35 — GLACIAL OVERBURDEN EXTRACTION WELL
- AREAS OF CONCERN

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC..
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004
5. W-53 IS FORMER MW-6 FROM SAUKVILLE FEED SUPPLIES INVESTIGATION.

SCALE : 1 INCH = 200 FEET

0 200' 400'

SITE LAYOUT PLAN

COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
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DRAWN BY: LMS	DATE: 02MAY06	P.N.: BA-0001-06
REVIEWED BY: RAC	DWG:	FIGURE 2

M:\USERS\RC\GALE\MYDOCS\CCP2006\CMS REV-06\PILOTTEST\SITELAYOUT.dwg

M:\BOBPROJECT\CCP2005\CMSREV-06\FIGURES\BASE.DWG-AREA1 BENZENE

PROPOSED
APPLICATION AREA
COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
330 East Kilbourn Ave., Suite 827
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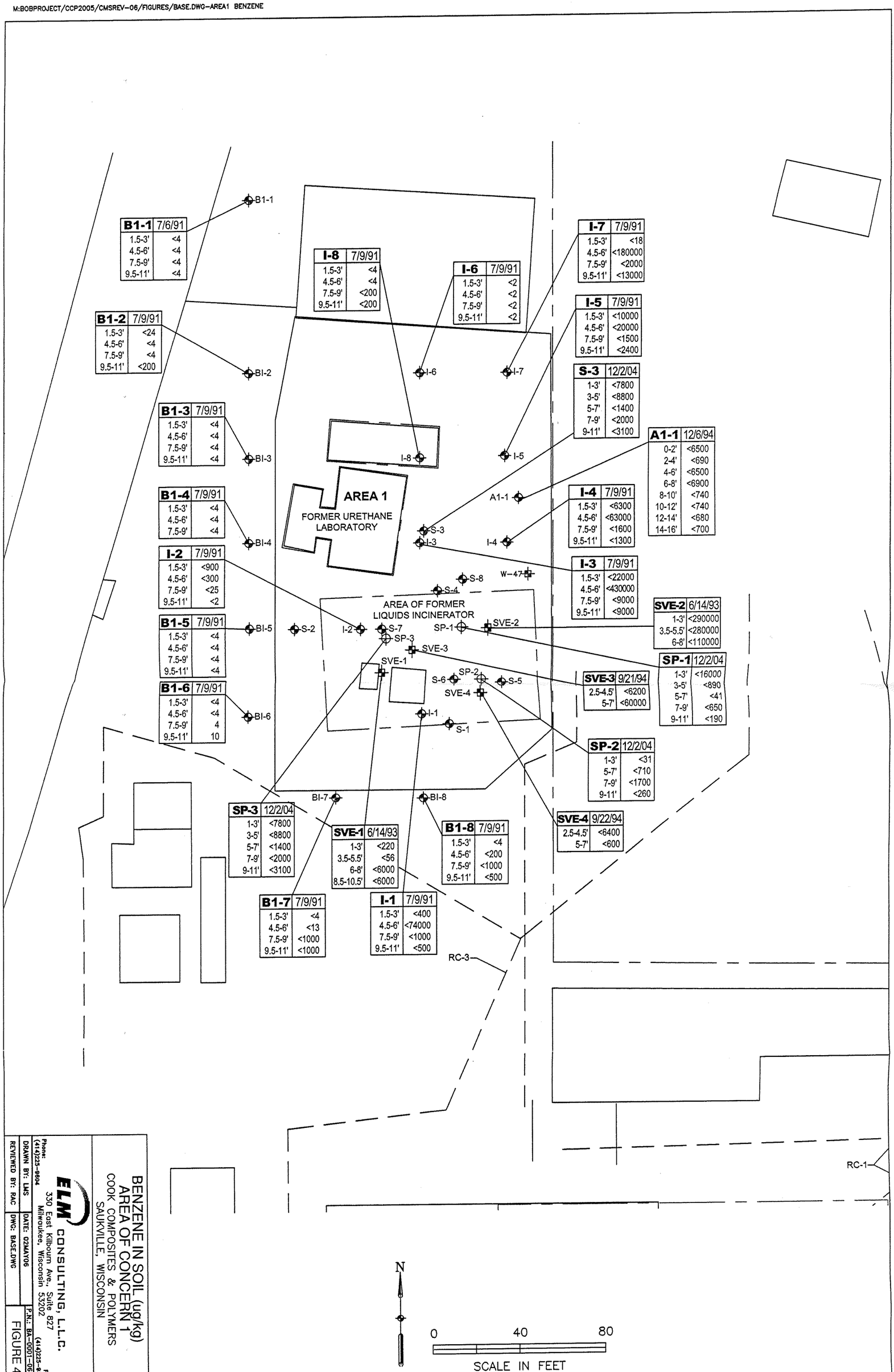
REVIEWED BY: RAC	DWG: BASE.DWG	FIGURE 3

M:BOBPROJECT/CCP2005/CMSREV-06/FIGURES/BASE.DWG-AREA1 BENZENE



BENZENE IN SOIL (ug/kg)
AREA OF CONCERN 1
COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

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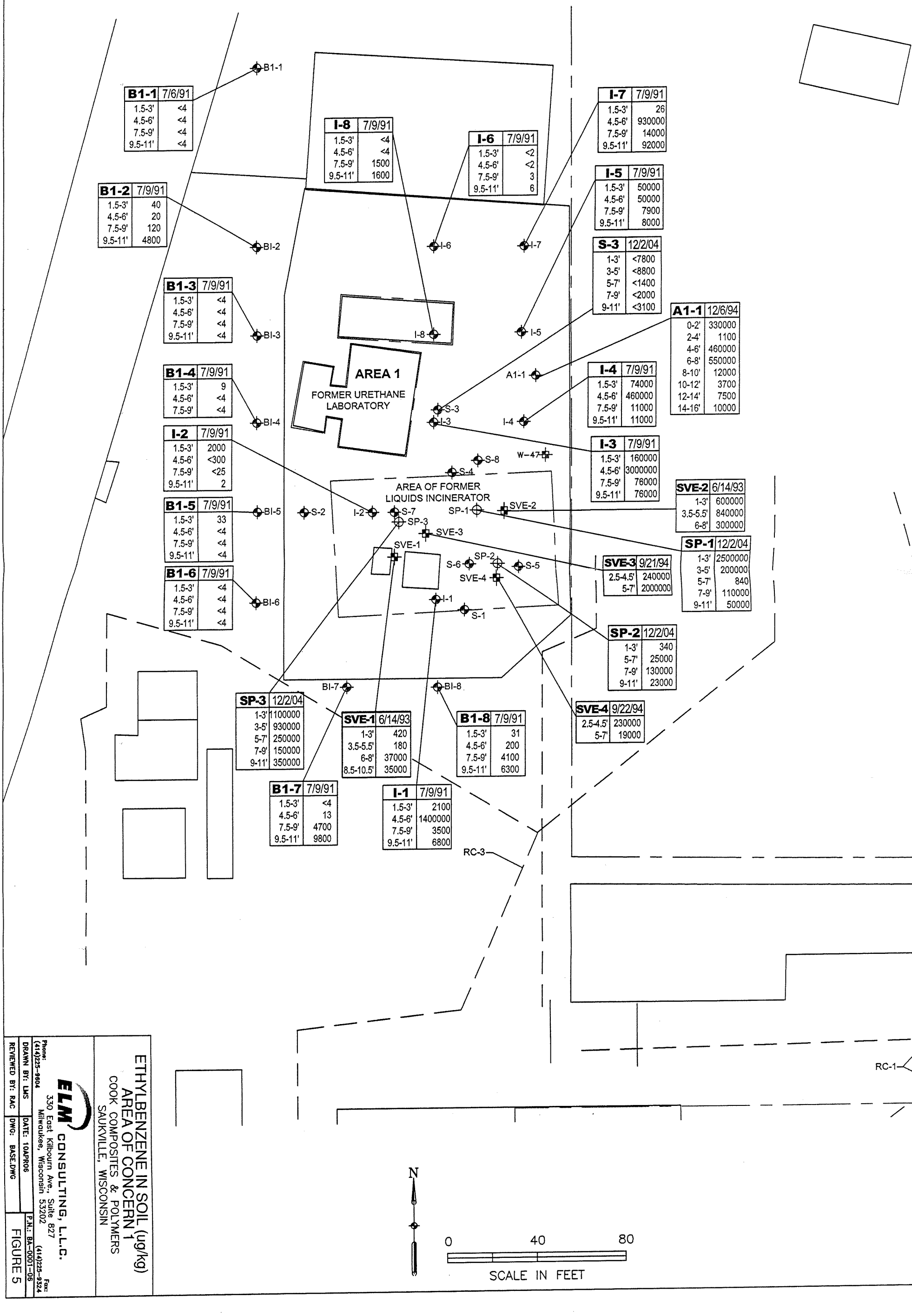
REVIEWED BY: RAC
DATE: 02MAY06
DWG: BASE.DWG
P.N.: BA-0001-06

FIGURE 4

M:BOBPROJECT/CCP2005/CMSREV-06/FIGURES/BASE.DWG-AREA1 ETHLBENZENE



B1-1	7/6/91
1.5-3'	<4
4.5-6'	<4
7.5-9'	<4
9.5-11'	<4

B1-2	7/9/91
1.5-3'	40
4.5-6'	20
7.5-9'	120
9.5-11'	4800

B1-3	7/9/91
1.5-3'	<4
4.5-6'	<4
7.5-9'	<4
9.5-11'	<4

B1-4	7/9/91
1.5-3'	9
4.5-6'	<4
7.5-9'	<4

I-2	7/9/91
1.5-3'	2000
4.5-6'	<300
7.5-9'	<25
9.5-11'	2

B1-5	7/9/91
1.5-3'	33
4.5-6'	<4
7.5-9'	<4
9.5-11'	<4

B1-6	7/9/91
1.5-3'	<4
4.5-6'	<4
7.5-9'	<4
9.5-11'	<4

I-8	7/9/91
1.5-3'	<4
4.5-6'	<4
7.5-9'	1500
9.5-11'	1600

I-6	7/9/91
1.5-3'	<2
4.5-6'	<2
7.5-9'	3
9.5-11'	6

I-7	7/9/91
1.5-3'	26
4.5-6'	930000
7.5-9'	14000
9.5-11'	92000

I-5	7/9/91
1.5-3'	50000
4.5-6'	50000
7.5-9'	7900
9.5-11'	8000

S-3	12/2/04
1-3'	<7800
3-5'	<8800
5-7'	<1400
7-9'	<2000
9-11'	<3100

A1-1	12/6/94
0-2'	330000
2-4'	1100
4-6'	460000
6-8'	550000
8-10'	12000
10-12'	3700
12-14'	7500
14-16'	10000

I-4	7/9/91
1.5-3'	74000
4.5-6'	460000
7.5-9'	11000
9.5-11'	11000

I-3	7/9/91
1.5-3'	160000
4.5-6'	3000000
7.5-9'	76000
9.5-11'	76000

SVE-2	6/14/93
1-3'	600000
3.5-5.5'	840000
6-8'	300000

SP-1	12/2/04
1-3'	2500000
3-5'	200000
5-7'	840
7-9'	110000
9-11'	50000

SVE-3	9/21/94
2.5-4.5'	240000
5-7'	2000000

SP-2	12/2/04
1-3'	340
5-7'	25000
7-9'	130000
9-11'	23000

SVE-4	9/22/94
2.5-4.5'	230000
5-7'	19000

SP-3	12/2/04
1-3'	1100000
3-5'	930000
5-7'	250000
7-9'	150000
9-11'	350000

SVE-1	6/14/93
1-3'	420
3.5-5.5'	180
6-8'	37000
8.5-10.5'	35000

B1-8	7/9/91
1.5-3'	31
4.5-6'	200
7.5-9'	4100
9.5-11'	6300

B1-7	7/9/91
1.5-3'	<4
4.5-6'	13
7.5-9'	4700
9.5-11'	9800

I-1	7/9/91
1.5-3'	2100
4.5-6'	1400000
7.5-9'	3500
9.5-11'	6800

ETHYLBENZENE IN SOIL (ug/kg)
AREA OF CONCERN 1
COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
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Fax: (414)225-9324

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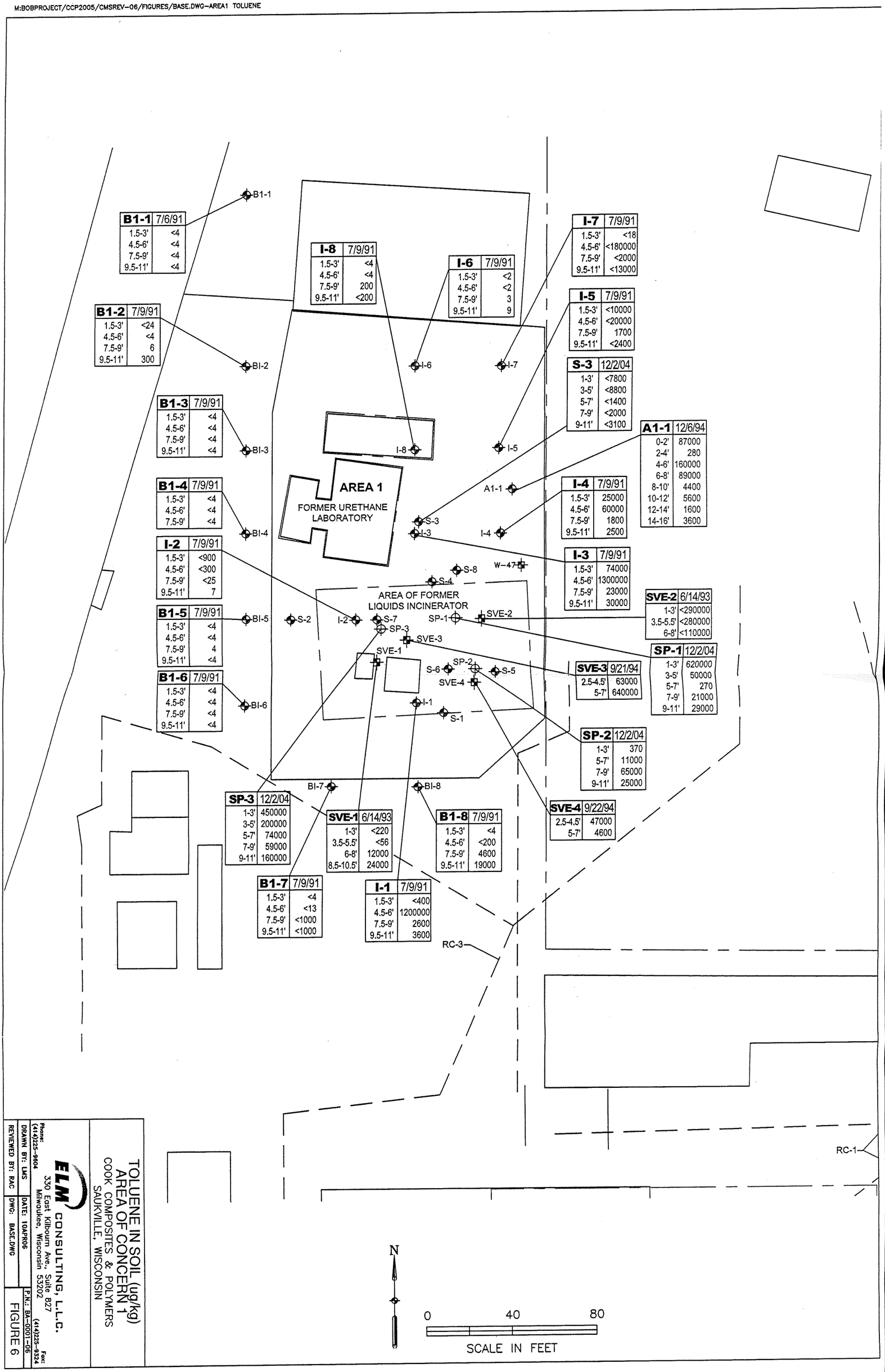
REVIEWED BY: RAC | DWG: BASE.DWG

FIGURE 5

M:BOBPROJECT/CCP2005/CMSREV-06/FIGURES/BASE.DWG-AREA1 TOLUENE



TOLUENE IN SOIL (ug/kg)
AREA OF CONCERN 1
COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
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DATE: 10APR06
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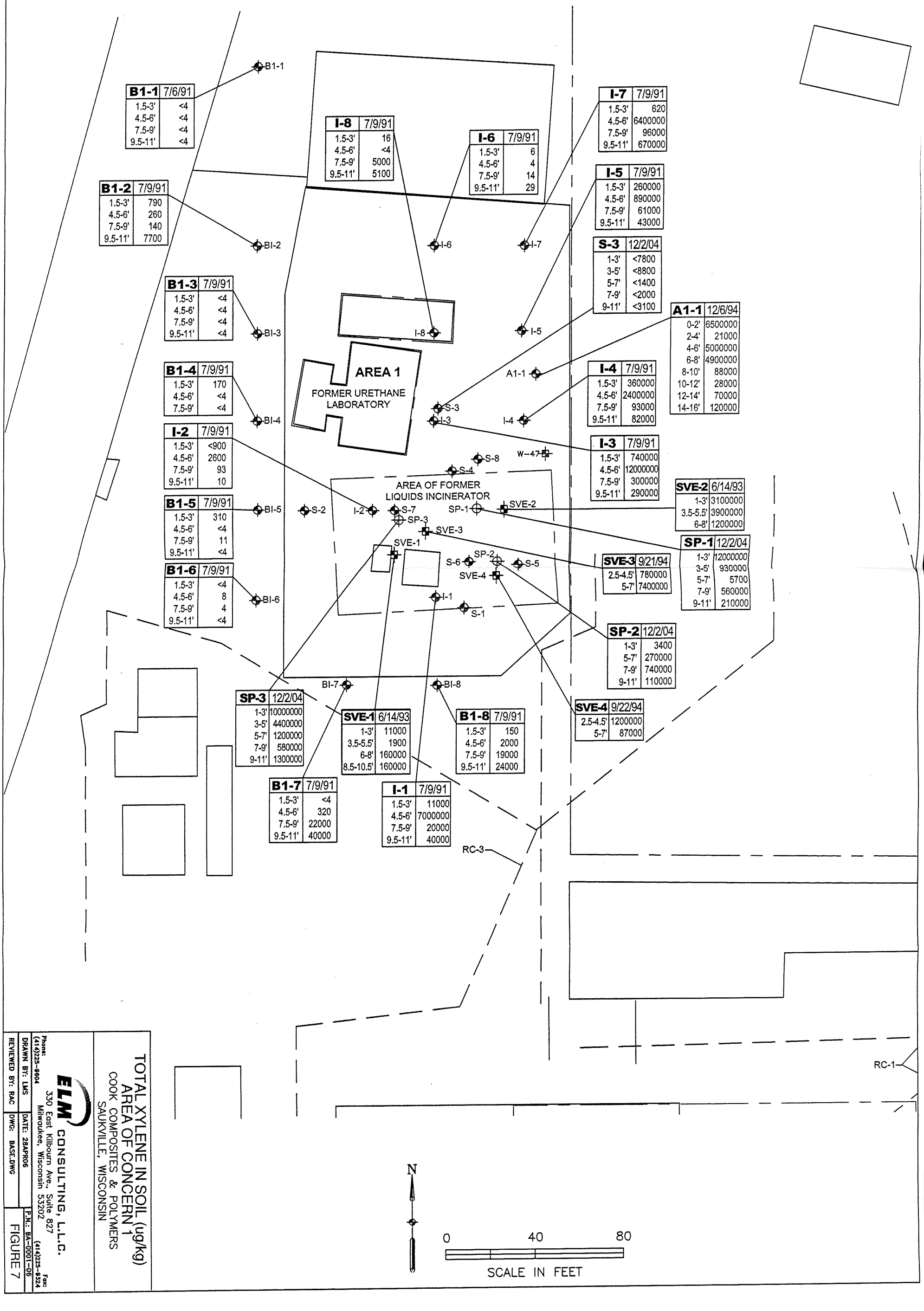
DWG: BASE.DWG
P.N.: BA-0001-06

FIGURE 6

M:BOBPROJECT/CCP2005/CMSREV-06/FIGURES/BASE.DWG-AREA1 TOTALXYLENE



B1-1	7/6/91
1.5-3'	<4
4.5-6'	<4
7.5-9'	<4
9.5-11'	<4

B1-2	7/9/91
1.5-3'	790
4.5-6'	260
7.5-9'	140
9.5-11'	7700

B1-3	7/9/91
1.5-3'	<4
4.5-6'	<4
7.5-9'	<4
9.5-11'	<4

B1-4	7/9/91
1.5-3'	170
4.5-6'	<4
7.5-9'	<4

I-2	7/9/91
1.5-3'	<900
4.5-6'	2600
7.5-9'	93
9.5-11'	10

B1-5	7/9/91
1.5-3'	310
4.5-6'	<4
7.5-9'	11
9.5-11'	<4

B1-6	7/9/91
1.5-3'	<4
4.5-6'	8
7.5-9'	4
9.5-11'	<4

B1-7	7/9/91
1.5-3'	<4
4.5-6'	320
7.5-9'	22000
9.5-11'	40000

SP-3	12/2/04
1-3'	10000000
3-5'	4400000
5-7'	1200000
7-9'	580000
9-11'	1300000

SVE-1	6/14/93
1-3'	11000
3.5-5.5'	1900
6-8'	160000
8.5-10.5'	160000

B1-8	7/9/91
1.5-3'	150
4.5-6'	2000
7.5-9'	19000
9.5-11'	24000

I-1	7/9/91
1.5-3'	11000
4.5-6'	7000000
7.5-9'	20000
9.5-11'	40000

I-8	7/9/91
1.5-3'	16
4.5-6'	<4
7.5-9'	5000
9.5-11'	5100

I-6	7/9/91
1.5-3'	6
4.5-6'	4
7.5-9'	14
9.5-11'	29

I-7	7/9/91
1.5-3'	620
4.5-6'	6400000
7.5-9'	96000
9.5-11'	670000

I-5	7/9/91
1.5-3'	260000
4.5-6'	890000
7.5-9'	61000
9.5-11'	43000

S-3	12/2/04
1-3'	<7800
3-5'	<8800
5-7'	<1400
7-9'	<2000
9-11'	<3100

A1-1	12/6/94
0-2'	6500000
2-4'	21000
4-6'	5000000
6-8'	4900000
8-10'	88000
10-12'	28000
12-14'	70000
14-16'	120000

I-4	7/9/91
1.5-3'	360000
4.5-6'	2400000
7.5-9'	93000
9.5-11'	82000

I-3	7/9/91
1.5-3'	740000
4.5-6'	12000000
7.5-9'	300000
9.5-11'	290000

SVE-2	6/14/93
1-3'	3100000
3.5-5.5'	3900000
6-8'	1200000

SVE-3	9/21/94
2.5-4.5'	780000
5-7'	7400000

SP-1	12/2/04
1-3'	12000000
3-5'	930000
5-7'	5700
7-9'	560000
9-11'	210000

SP-2	12/2/04
1-3'	3400
5-7'	270000
7-9'	740000
9-11'	110000

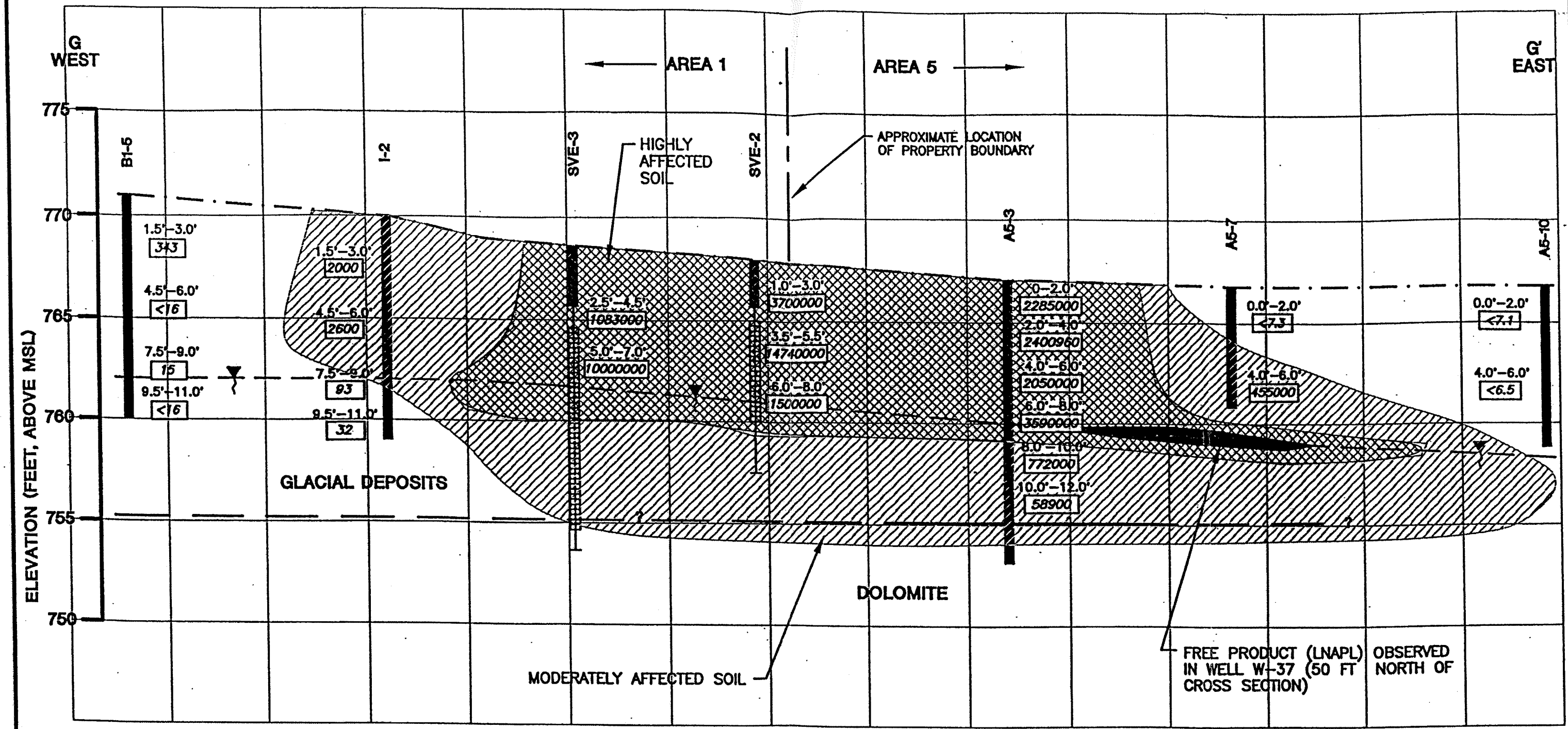
SVE-4	9/22/94
2.5-4.5'	1200000
5-7'	87000

TOTAL XYLENE IN SOIL (ug/kg)
AREA OF CONCERN 1
COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
330 East Kilbourn Ave., Suite 827
Milwaukee, Wisconsin 53202
Phone: (414)225-9604
Fax: (414)225-9324

DRAWN BY: LMS | DATE: 28APR06 | P.N.: BA-0001-06
REVIEWED BY: RAC | DWG: BASE.DWG

FIGURE 7



LEGEND

- EXISTING GROUND SURFACE
- WATER TABLE
- STRATIGRAPHIC CONTACT, DASHED WHERE INFERRED
- 20900 — TOTAL BTEX CONCENTRATIONS IN SOIL (ug/kg)
- 1.5'–3.0' — SAMPLED INTERVAL, FEET BELOW GROUND SURFACE

WELL CONSTRUCTION

- CASING OR BENTONITE SEAL
- OPEN BOREHOLE OR FILTER PACK
- COMPLETED WELL (SCREENED INTERVAL)

NOTES

1. ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL (MSL).
2. GROUND SURFACE ELEVATIONS AT BORINGS B1–5, I–2, AND SVE–1 ARE APPROXIMATE, ESTIMATED FROM NEARBY WELLS.
3. WATER TABLE ELEVATIONS ARE APPROXIMATE. ELEVATIONS ARE ESTIMATED FROM THE SUMMER, 1995 WATER TABLE MAP.
4. SOIL CHEMISTRY DATA USED TO DEVELOP THIS CROSS SECTION IS FROM HATCHER–SAYRE (1991b), RMT (1993a) AND THIS STUDY.

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=5'
VERTICAL EXAGGERATION = X4

AREAS 1 AND 5 SOIL CHEMISTRY CROSS SECTION G-G'

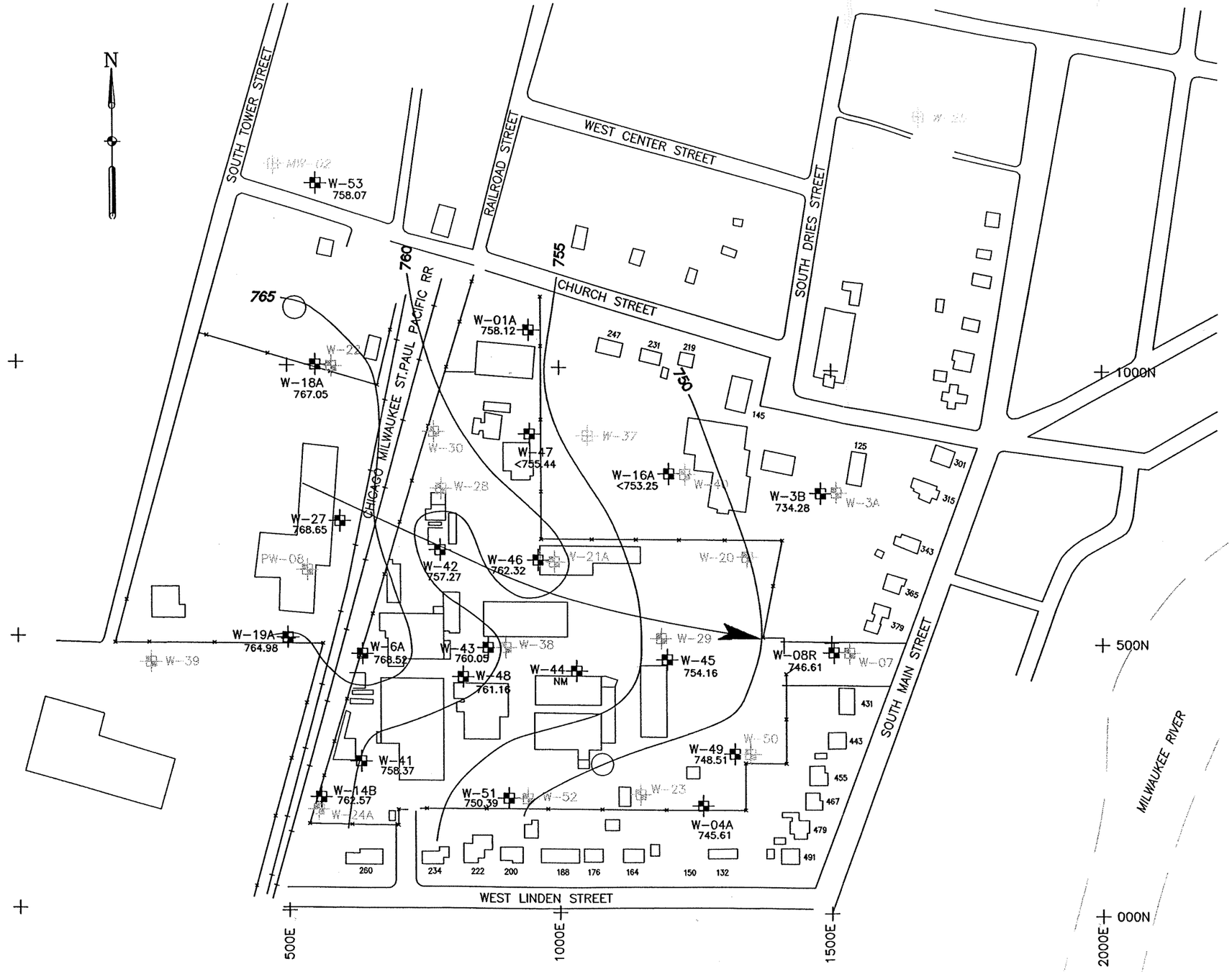
COOK COMPOSITES & POLYMERS RCRA FACILITY INVESTIGATION SAUKVILLE, WISCONSIN

RMT INC.

DWN. BY:	BLG
APPROVED BY:	ELM
DATE:	OCTOBER 1995
PROJ. #	1832.92
FILE #	18329210

$$DWG$$
$$PRF$$
$$SCALE$$
$$DATE$$

FIGURE 8



LEGEND

- BUILDING
- ROAD
- FENCE
- RAILROAD
- WATERLINE
- W-3B — MONITORING WELL LOCATION AND NUMBER
- W-25 — ABANDONED WELL LOCATION AND NUMBER
- NM — NOT MEASURED
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 5 FEET

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC..
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE : 1 INCH = 200 FEET

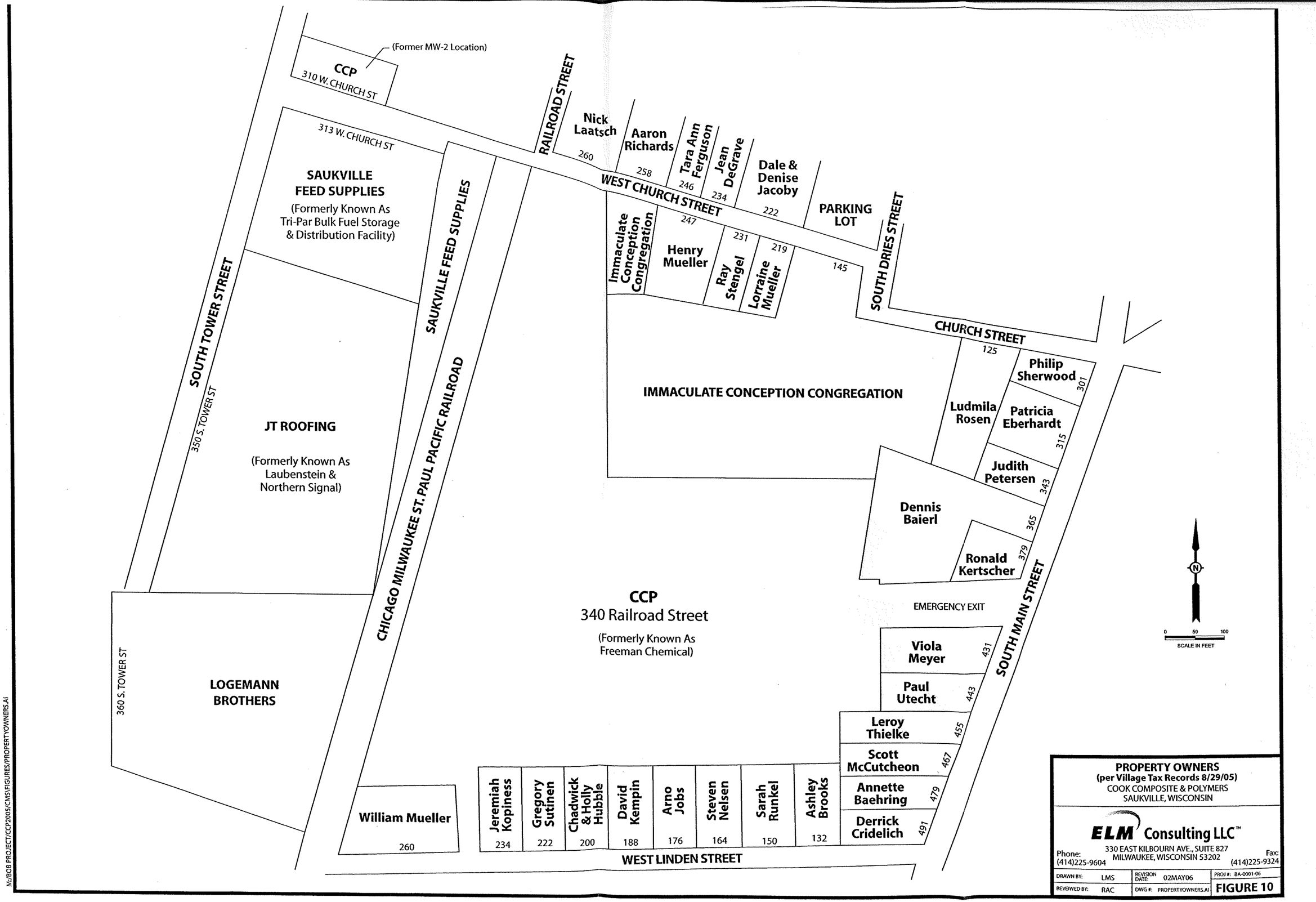
0 200' 400'

WATER TABLE MAP
GLACIAL DRIFT WELL, FALL 2005
COOK COMPOSITE & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
330 East Kilbourn Ave., Suite 827
Milwaukee, Wisconsin 53202
Phone: (414)225-9604
Fax: (414)225-9324

DRAWN BY: LMS	DATE: 10APR06	P.N.: BA-0001-06
REVIEWED BY: RAC	DWG: WT-GLACIAL-10-05	FIGURE 9

M:\USERS\RGIGALE\MYDOCS\CCP 2005\CMS REVI-06\FIGURES\GLACIAL-REV.DWG



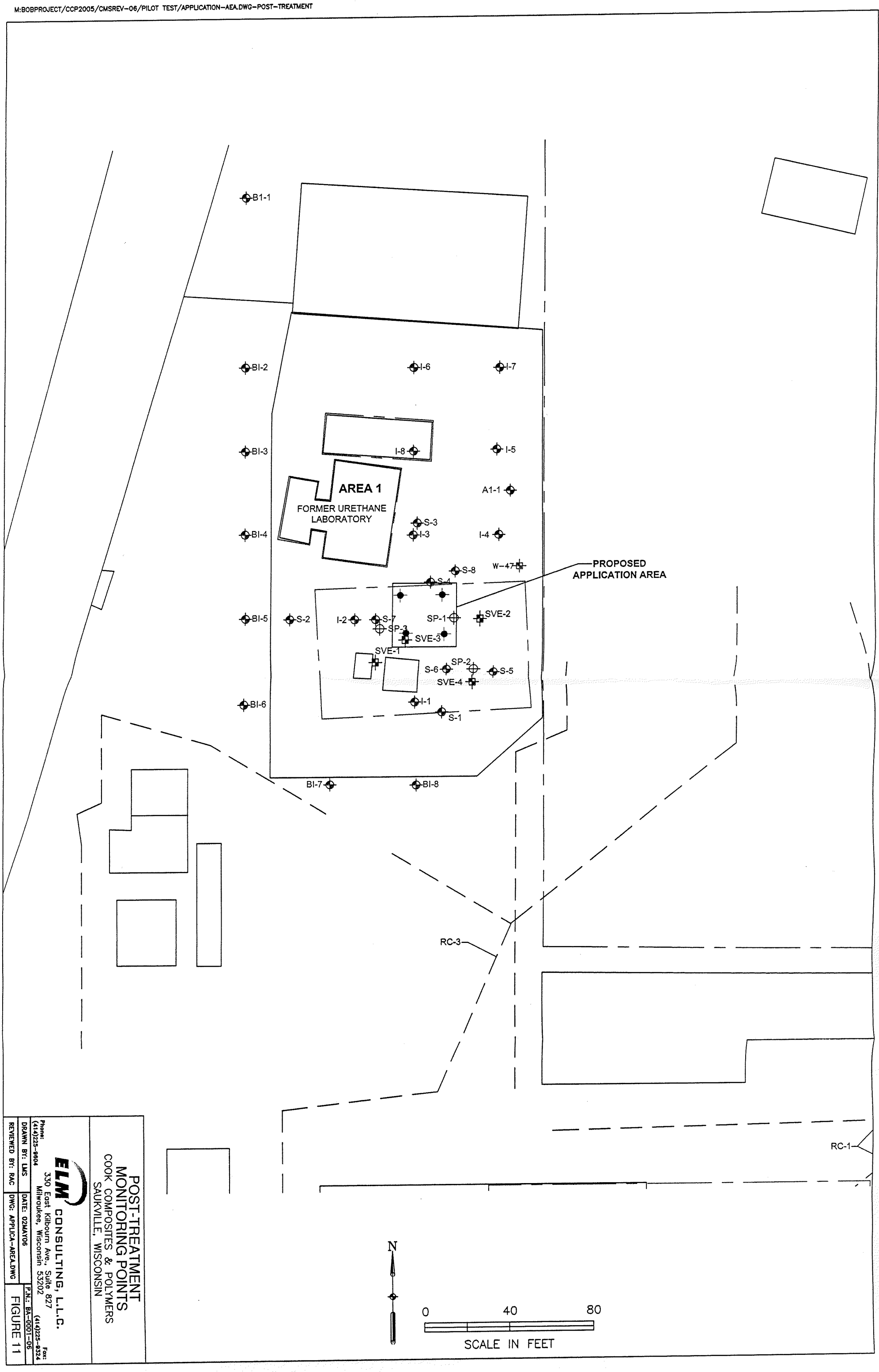
M:/BOB PROJECT/CCP2005/CMS\FIGURES/PROPERTYOWNERS.AI

PROPERTY OWNERS
(per Village Tax Records 8/29/05)
COOK COMPOSITE & POLYMERS
SAUKVILLE, WISCONSIN

ELM Consulting LLC™
330 EAST KILBOURN AVE., SUITE 827
MILWAUKEE, WISCONSIN 53202
Phone: (414)225-9604
Fax: (414)225-9324

DRAWN BY: LMS	REVISION DATE: 02MAY06	PROJ #: BA-0001-06	
REVEIWED BY: RAC	DWG #: PROPERTYOWNERS.AI	**FIGURE 10**	

M:BOBPROJECT/CCP2005/CMSREV-06/PILOT TEST/APPLICATION-AEA.DWG-POST-TREATMENT



POST-TREATMENT MONITORING POINTS
COOK COMPOSITES & POLYMERS
SAUKVILLE, WISCONSIN

ELM CONSULTING, L.L.C.
330 East Kilbourn Ave., Suite 827
Milwaukee, Wisconsin 53202
Phone: (414)225-9604
Fax: (414)225-9324

DRAWN BY: LMS	DATE: 02MAY06
REVIEWED BY: RAC	DWG: APPLICA-AREA.DWG
	P.N.: BA-0001-06

FIGURE 11

Table 4

Remediation Progress - Glacial Drift - VOC Results
Cook Composites and Polymers Co.
Saukville, Wisconsin

			Sample ID	W-47-05-4
			Collection Date	1/11/2006
			Laboratory ID	868244-006
			Duplicate Parent	
			Monitoring Objective	Remediation Progress
			Hydrogeologic Unit	Glacial Drift
			Dilution	250
Parameter	PAL	ES	Units	
1,1,1,2-Tetrachloroethane	7	70	µg/L	<230
1,1,1-Trichloroethane	40	200	µg/L	<220
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<50
1,1,2-Trichloroethane	0.5	5	µg/L	<100
1,1-Dichloroethane	85	850	µg/L	<190
1,1-Dichloroethene	0.7	7	µg/L	<140
1,2,3-Trichloropropane	12	60	µg/L	<250
1,2-Dibromo-3-chloropropane	0.02	0.2	µg/L	<220
1,2-Dibromoethane	0.005	0.05	µg/L	<140
1,2-Dichloroethane	0.5	5	µg/L	<90
1,2-Dichloropropane	0.5	5	µg/L	<120
2-Butanone	90	460	µg/L	<1100
2-Hexanone	-	-	µg/L	<280
4-Methyl-2-pentanone	50	500	µg/L	<300
Acetone	200	1000	µg/L	<580
Acetonitrile	-	-	µg/L	<820
Acrolein	-	-	µg/L	<2500
Acrylonitrile	-	-	µg/L	<320
Allyl Chloride	-	-	µg/L	<500
Benzene	0.5	5	µg/L	<100
Bromodichloromethane	0.06	0.6	µg/L	<140
Bromoform	0.44	4.4	µg/L	<240
Bromomethane	1	10	µg/L	<230
Carbon disulfide	200	1000	µg/L	<160
Carbon tetrachloride	0.5	5	µg/L	<120
Chlorobenzene	20	100	µg/L	<100
Chlorodibromomethane	6	60	µg/L	<200
Chloroethane	80	400	µg/L	<240
Chloroform	0.6	6	µg/L	<92
Chloromethane	0.3	3	µg/L	<60
cis-1,2-Dichloroethene	7	70	µg/L	<170
cis-1,3-Dichloropropene	0.02	0.2	µg/L	<48
Dibromomethane	-	-	µg/L	<150
Dichlorodifluoromethane	200	1000	µg/L	<250
Ethyl methacrylate	-	-	µg/L	<200
Ethylbenzene	140	700	µg/L	**2500**
Fluorotrichloromethane	698	3490	µg/L	<200
Iodomethane	-	-	µg/L	<160
Isobutanol	-	-	µg/L	<980
Methacrylonitrile	-	-	µg/L	<300
Methyl methacrylate	-	-	µg/L	<280
Methylene chloride	0.5	5	µg/L	<110
Propionitrile	-	-	µg/L	<400
Styrene	10	100	µg/L	<220
Tetrachloroethene	0.5	5	µg/L	<110
Toluene	200	1000	µg/L	**3000**
trans-1,2-Dichloroethene	20	100	µg/L	<220
trans-1,3-Dichloropropene	0.02	0.2	µg/L	<48
trans-1,4-Dichloro-2-butene	-	-	µg/L	<280
Trichloroethene	0.5	5	µg/L	<120
Vinyl acetate	-	-	µg/L	<400
Vinyl Chloride	0.02	0.2	µg/L	<45
Total Xylene	1000	10000	µg/L	**67000**
Total VOCs			µg/L	**72500**
Previous Results			µg/L	94834
Date				(7/04)

Indicates concentration in exceedance of Wis. Admin. Code Chapter NR 140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wis. Admin. Code Chapter NR 140 Enforcement Standard (ES)

VOCs - volatile organic compounds
µg/L - micrograms per liter

Table 3

Remediation Progress - Glacial Drift - Metal, PCB and SVOC Results
Cook Composites and Polymers Co.
Saukville, Wisconsin

		Sample ID		W-47-05-4	DUP-2-05-4
		Collection Date		1/11/2006	1/11/2006
		Laboratory ID		868244-006	868244-006
		Duplicate Parent			W-47-06-1
		Monitoring Objective		Remediation Progress	
		Hydrogeologic Unit		Glacial Drift	
		Dilution		2	
Parameter	PAL	ES	Units		
Barium	400	2000	ug/L	**180**	
Arsenic	1	10	ug/L	**5** **N**	
		Dilution		1	1
Parameter	PAL	ES	Units		
Aroclor 1016	-	-	ug/L	<0.27	<0.26
Aroclor 1221	-	-	ug/L	<0.27	<0.26
Aroclor 1232	-	-	ug/L	<0.27	<0.26
Aroclor 1242	-	-	ug/L	**3.0**	**1.5**
Aroclor 1248	-	-	ug/L	<0.27	<0.26
Aroclor 1254	-	-	ug/L	<0.27	<0.26
Aroclor 1260	-	-	ug/L	<0.27	<0.26
Total PCBs	0.003	0.03	ug/L	**3.0**	**1.5**
		Dilution		5	
1,4-Dioxane	-	-	ug/L	<24	
2,4-Dimethylphenol	-	-	ug/L	**1200**	
2-Methylnaphthalene	-	-	ug/L	**4.5**	
2-Methylphenol	-	-	ug/L	**97**	
3 & 4-Methylphenol	-	-	ug/L	**86**	
Acetophenone	-	-	ug/L	<8.0	
bis(2-ethylhexyl)phthalate	0.6	6	ug/L	<33	
Naphthalene	8	40	ug/L	**30**	
Phenanthrene	-	-	ug/L	<0.40	
Phenol	1200	6000	ug/L	**7.1** **J**	
1,2-Dichlorobenzene	60	600	ug/L	<1.6	
1,3-Dichlorobenzene	125	1250	ug/L	<1.6	
1,4-Dichlorobenzene	15	75	ug/L	<1.6	

Indicates concentration in exceedance of Wis. Admin. Code Chapter NR 140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wis. Admin. Code Chapter NR 140 Enforcement Standard (ES)

N - Spiked sample recovery not within control limits.
J - Result is an estimated value below the reporting limit.
µg/L - micrograms per liter

*Application for BIOX® Process Injection Approval**

Date: April 24, 2006

General Information

Site Name & Address	***Responsible Party***
Name: Cook Composites & Polymers Address: 340 S. Railroad Street Saukville, WI County: Ozaukee Contact: Glenn Preisler Title: Plant Manager Phone: 262-284-0555 x395 FAX: 262-284-0593	Name: Cook Composites and Polymers c/o Elm Consulting LLC Address: 330 East Kilbourn Avenue Milwaukee, WI 53202 Contact: Robert Cigale Title: Sr. Consultant Phone: 414-225-9604

State Site #: 246004330	***Engr. Project #: BA-0001-19***	***BIOX® Project #: 790-P-A1-REV***

Site Legal Description	***Consultant***
Parts of lot 2 & 3, block 6; parts of lot 6 & 7, block 4 Commencing 156' N of the NW corner of Miller Sub E 163" N 25' E 465' N 85' E 245' N 137' E 225' NE 89' W 288' N 183' W 450' N 478" Nwesterly to Rail Road Street SW 1059' to point of beginning	Name: Elm Consulting LLC Address: 330 East Kilbourn Ave Milwaukee, WI 53202 Contact: Robert Cigale Title: Sr. Consultant Phone: 414-225-9604 FAX: 414-225-9324

Site Information

Type of Site

☐ Service Station	☐ Pipe Line	☐ Dry Cleaner	☐ Electrical Sub-Station	☐ LUST
X Chemical Plant	☐ Foundry	☐ Agri-Formulator	☐ Tank Farm	☐ ERP
☐ Refinery	☐ Paper Mill	☐ Wood Treating	☐ Industrial Plant	☐CERCLA
☐ Bulk Plant	☐ Power Gen. Plant	☐ Body Shop	☐ Spill - Type: _____	**X** RCRA

Do other remediation systems exist on the site? ☐ No **X** Yes - Type: **Groundwater extraction systems consisting of Ranney Collectors and extraction wells in the glacial drift unit and extraction wells in the shallow dolomite unit. Extracted groundwater is discharged to the Village of Saukville POTW.**

Type of Contamination

☐ Gasoline ☐ Diesel ☐ Fuel Oil ☐ Waste Oil ☐ Chlorinated Solvents ☐ PCBs ☐ PCP ☐ Pesticides
☐ Herbicides **X** BTEX ☐ PAHs **X** VOCs ☐ PVOCs Others:

Maximum Soil Concentration

Benzene: 2,500 mg/kg, Toluene: 1,300 mg/kg, Ethylbenzene: 2,500 mg/kg, Xylene: 12,000 mg/kg, Total BTEX: 16,300 mg/kg,
Maximum Groundwater Concentration Benzene: <0.1 mg/L, Toluene: 3.0 mg/L, Ethylbenzene: 2.5 mg/L, Xylene: 67 mg/L, Total BTEX: 72.5 mg/L
Contamination Zone(s) Areal Extent: 900 ft.^{2} x Vertical Extent: (1' to 15 ' bgs) ft. = 467 cy Soil Type: Silty Sand, Clay, Sand & Gravel Depth to GW: 7.5ft. to 15ft

Application Information:

Injection Zone	***BIOX® Application***
Surface Area: 30' x 30"	Hole Spacing: 4'
Vertical Zone: 1' to 15"	Number of Holes: 56
Volume: 467 cy	BIOX® Total: 2917 Gallons
	BIOX® per cy: 5 Gallons
	BIOX® per Hole: 52 Gallons
	Est. Days per Appl.: Approx. 4 Days

Maximum Elemental Concentrations in BIOX® Fluids

Ca: 42,000 mg/L	O: 108,000 mg/L	C: 2,400 mg/L
H: 3,700 mg/L	N: 3,360 mg/L	K: 23,500 mg/L
P: 22,000 mg/L	S: 1,150 mg/L	Fe: 2,000 mg/L

Application Rationale:

(Explanation of proposed treatment)

Forward: This *Application for BIOX® Process Injection Approval* has been prepared in order to obtain a General Permit to allow for implementation of the Pilot Test Project plan submitted by ELM Consulting LLC pursuant to this project. All calculations and injection scenarios have been based upon the contaminant and site information submitted to BMS by the consultant.

The Project: The project consists of one application as configured in the attached site map (See attachment 3). The purpose of the BIOX application is to oxidize contaminants in soil and groundwater as depicted in

the attached site map.

There is no apparent potential for migration of reagent and/or contaminants off-site via artificial migration pathways. Compared to more rigorous injection technologies, three circumstances inherent to the BIOX process greatly lessens the concerns of areal extension of contamination.

First, the BIOX process calls for the establishment of numerous injection points, see Application information above, each receiving only a relatively small amount of reagent (see above). This assures uniformity of application over the site and eliminates the possibility of establishing an unknown potentially harmful pathway.

Secondly, the large number of points allows the site to vent vertically thus releasing any pressure whether from injection hydraulics or the oxidations reaction. When previously measured with pressure registering devices on similar site in Wisconsin, no areal pressure gradient was observed.

Finally because the BIOX reaction is controlled, the rapid exothermic reaction indicative of conventional in-sitsu liquid hydrogen peroxide oxidation technology is eliminated. This coupled with the injection technique described herein, virtually eliminates migration problems.

If it is believed that monitoring the potential impact of migration on this site is necessary, it is recommended that pressure sensing devices be installed at existing monitoring wells. A pressure guage is then installed on the cap. This accomplishes two purposes. First, it will indicated any buildup of pressure in the subsurface and secondly, if any pressure is witnessed, vapor samples can be easily collected.

Wells: Since no conventional injection wells are necessary for the application of the BIOX® reagent, no provision is necessary for installation, maintenance or removal. After application, the BIOX® injection points are closed by first, sealing the subsurface with bentonite and then patching with asphalt or concrete depending upon the composition of the pavement material.

Possible Variations: One of the evolutionary aspects of the technology has revealed that areas of high concentration of contaminants are often discovered during the injection process. This is manifest by the reflection of bubbles and contaminant from the injection point. Product sheens as well as contaminant odor are the usual tell-tale signs that perched product or soil bound contaminants have been located. BMS has developed a technique for treating these hot spots with varied and/or more concentrated reagent loads than in lower concentration areas. If hot spots are encountered at the Site, this technique may be enacted to address the problem. The number and location of the injection points contribute to the characterization of the site while simultaneously effecting remediation. This phenomenon is used by consulting engineering firms who have field experience with the BIOX process to more clearly delineate contamination areas at sites. If such contamination is discovered, notification will be given to the engineer, however, any modification made with not affect the overall Remedial Action Plan.